INTISARI

Latar Belakang: Kaki diabetes merupakan salah satu komplikasi dari diabetes mellitus yang menyebabkan gangguan struktur jaringan termasuk kulit. Gangguan struktur kulit tersebut diakibatkan hiperglikemia persisten dan akumulasi advanced glycation end-products (AGEs). Gangguan struktur histologi pada kulit telapak kaki diabetes meliputi epidermis lebih tipis, dermis lebih tebal. Namun belum ada laporan tentang gambaran junctio dermoepidermalsis (JDE) dan ekspresi collagen IV yang merupakan komponen membrana basalis epithelium.
Tujuan Penelitian: Tujuan penelitian ini adalah karakterisasi kulit telapak kaki tikus model hiperglikemia yang diinduksi Streptozotocin-Nicotinamide dengan mengetahui gambaran histologi dan ekspresi mRNA COL4.
Metode: Tikus Sprague Dawley jantan (n=12, 8-10 minggu, 200-250gr), dibagi menjadi dua kelompok yaitu kelompok kontrol normal dan kelompok hiperglikemia. Hiperglikemia diinduksi dengan Nicotinamide 100mg/kgBB dan Streptozotocin 65 mg/kgBB dan dinyatakan berhasil jika GDS>200 mg/dL pada hari ke-7 setelah induksi. Jaringan kulit telapak dibuat blok paraffin dan diiris dengan ketebalan 6 µm. Irisan jaringan kulit diwarnai dengan hematoxylin eosin untuk pengamatan JDE dan hematoxylin verhoeff pengamatan fibra collageni. Ekspresi relatif mRNA COL4 diukur dengan metode qRT-PCR menggunakan β-actin sebagai housekeeping gene.
Hasil Penelitian: Gambaran histologi JDE kelompok hiperglikemia sebagian landai. Gambaran fibra collageni dermis kelompok hiperglikemia terlihat padat. Rerata nilai ekspresi relatif mRNA COL4 pada kelompok kontrol normal 1,19 ± 0,82, kelompok hiperglikemiasebesar 1,53 ± 1,42. Nilai p sebesar 0,622 (p>0,05) sehingga tidak terdapat perbedaan bermakna antar kelompok.
Kesimpulan: Gambaran JDE sebagian tampak landai dan collagen tampak padat pada kulit telapak kaki tikus dengan hiperglikemia kronis

Kata kunci: *kaki diabetes, junctio dermoepidermalis, collagen, mRNA COL4*

ABSTRACT

Introduction*: Diabetic foot is one of the complications of diabetes mellitus that causes structural disturbances in tissues, including the skin. These skin structural disturbances are a result of persistent hyperglycemia and the accumulation of advanced glycation end-products (AGEs). Histological structural disturbances in the skin of diabetic foot include thinner epidermis and thicker dermis. However, there have been no reports on the appearance of the dermoepidermal junction (JDE) and the expression of collagen IV, which is a component of the epithelium's basement membrane.*
Research Objectives*: The aim of this study is to characterize the skin of the rat's footpad in a hyperglycemia model induced by Streptozotocin-Nicotinamide and to assess the histological features and mRNA expression of COL4.*
Methods*: Male Sprague Dawley rats (n=12, 8-10 weeks old, 200-250g) were divided into two groups: the normal control group and the hyperglycemia group. Hyperglycemia was induced using Nicotinamide 100mg/kgBW and Streptozotocin 65 mg/kgBW and considered successful if the blood glucose level was >200 mg/dL on the 7th day after induction. The skin tissue of the rat foot was embedded in paraffin blocks and sliced to a thickness of 6 µm. The skin slices were stained with hematoxylin-eosin to observe JDE and with hematoxylin verhoeff to observe collagen fibers. The relative expression of COL4 mRNA was measured using qRT-PCR method with β-actin as a housekeeping gene.*
Results*: In the hyperglycemia group, the histological appearance of the dermalepidermal junction (DEJ) is somewhat flatter compared to the normal control group. The collagen fibers in the dermis of the hyperglycemia group appear denser. However, when comparing the relative expression values of mRNA COL4 between the normal control group (1.19 ± 0.82) and the hyperglycemia group (1.53 ± 1.42), the statistical analysis showed that there is no significant difference between the two groups, with a p-value of 0.622 (p>0.05). This suggests that there is no meaningful difference in the expression of COL4 mRNA between the two groups.*
Conclusion*: The DEJ in the footpad of rats with chronic hyperglycemia showed a flatter appearance and denser collagen distribution.*

Keywords: *diabetic foot, dermal-epidermal junction, collagen, COL4 mRNA*